

NATURAL RESOURCES CONSERVATION SERVICE CONSERVATION PRACTICE STANDARD

PASTURE AND HAY PLANTING

(Acre)
CODE 512

DEFINITION

Establishing native or introduced forage species.

PURPOSES

This practice may be applied as part of a conservation management system to accomplish one or more of the following purposes:

- Establish adapted and compatible species, varieties or cultivars for forage production.
- Improve or maintain livestock and/or wildlife nutrition and/or health.
- Balance forage supply and demand during periods of low forage production.
- Reduce soil erosion by wind and/or water.
- Improve water quality by reducing sediment and nutrients in runoff.
- Increase carbon sequestration.

CONDITIONS WHERE PRACTICE APPLIES

This practice may be applied on cropland, hayland, pastureland and other lands where forage production and/or conservation is needed and feasible.

CRITERIA

General Criteria Applicable to All the Purposes Stated Above

Plant species and their cultivars, varieties or accessions shall be selected based on:

- Climate conditions, such as annual rainfall, seasonal rainfall patterns, growing season length, temperature extremes, USDA Plant Hardiness Zones or Major Land Resource Areas.
- Soil condition and position attributes such as soil texture, pH, available water holding capacity, slope, aspect, shallow depth or restrictive pans, inherent fertility, salinity and alkalinity, acidity, drainage class,

flooding and ponding and levels of toxic elements such as selenium and aluminum that may be present.

- Plant resistance to disease and insects common to the site or location.
- Plant compatibility with other forage species and their selected cultivar(s) in rate of establishment, maturity, palatability and growth habit when seeded together as a forage mixture.
- Plant compatibility with irrigation when applied.

Specified seed, planting rates, methods of planting and date of planting shall be consistent with documented guidance cited by plant materials program, research and demonstration trials for achieving satisfactory establishment. **See Plant Materials Technical Notes 10 and 24.**

All seed and planting materials shall be labeled and meet state seed quality law standards. Use of certified seed will be encouraged.

Based on seed tags, adjust seeding rates at field site to ensure the required amount of pure live seed (PLS) is applied to site. **See NRCS Idaho Plant Materials Technical Note 4.**

Provide a firm, weed-free seedbed that ensures seed contact with mineral soil and ample moisture to uniformly facilitate seedling emergence. *Rule-of-thumb: a person's footprint will not be deeper than about ½ inch.* A weed-free seedbed will generally not exceed one (1) seedling per square foot of an unwanted plant at time of planting.

Fertilizer and soil amendment recommendations shall be based on current soil tests.

If needed, legume seed shall be inoculated with the proper species of viable Rhizobia.

All shaping, grading or other structural measures (terraces, contours, grassed waterways, etc.) needed for successful pasture or hayland establishment will be installed prior to the seeding operation. (On wetland sites these practices may alter wetland hydrology and be subject to laws and permits dealing with wetland alterations.)

This practice will be undertaken only where domestic grazing animals can be excluded to permit stand establishment. Temporary fencing may be required where only part of a pasture is being seeded and where livestock exclusion is not possible for the entire pasture.

Additional Criteria for Improving or Maintaining Livestock and/or Wildlife Nutrition and/or Health

Forage species must be capable of meeting the desired level of nutrition for the kind and class of animal.

The forage species selected should be managed to avoid animal health problems such as bloat or prussic acid poisoning with alfalfa, grass tetany with crested wheatgrass or fescue foot with tall fescue.

Additional Criteria for Balancing Forage Supply and Demand during Periods of Low Forage Production

Forage species selected shall fulfill a recognized dietary deficiency, quality and quantity within the year long forage management program.

Additional Criteria for Reducing Erosion by Wind and/or Water

Plants shall have the ability to provide adequate retardance to wind forces and water flows.

Wind erosion areas, in wind erodibility groups 1 and 2 or soils with wind erosion indexes of 134 or higher, plant into crop residues or during non critical erosion periods or use a cover crop to control erosion. The practice Residue Management - Mulch Till (345) will be followed when planting during critical erosion periods.

Additional Criteria to Increase Carbon Sequestration

For optimal carbon storage, select species that increase site biomass.

CONSIDERATIONS

Other management and facilitating practices may be used in combination with Pasture and Hay Planting.

Where wildlife management is an objective, the food and cover value of the planting can be enhanced by using habitat recommendations found in Biology Technical Notes.

Forage species planted in mixture should exhibit similar palatability to one another to avoid spot or selective grazing.

When planting perennial grasses alone or in mixtures, fertilizing with nitrogen at planting time may enhance weedy annuals.

Fall and dormant seedings may expose legumes to potential killing frosts during seedling stage.

On heavy to medium textured soils that tend to form soils crusts over winter, early spring plantings should be considered.

In wind erosion areas, consider a temporary cover crop to control erosion.

On sloping land where relatively weed-free crop residues are present or will result from the existing or planned crop, consider minimizing seedbed operations to maintain adequate residues on the surface for protecting the new planting.

Use nurse crops only under irrigated conditions or high annual rainfall (16 inches or greater) areas. Seeding rates for nurse crops under dryland conditions should be no more than 30 percent of the normal seeding rate used for that crop. Consider harvesting nurse crop as hay, and manage according to moisture conservation practices and light requirements of seedlings to aid seeding establishment.

When plantings are to be irrigated, maintain adequate moisture at least in the upper six (6) inches of soil during the first four (4) weeks and then in the upper 12 inches until the end of the growing season. Seedlings may be susceptible to excessive irrigation during establishment.

Control of noxious and competitive weeds by mowing, clipping or herbicide should be planned. Grass seedlings should be allowed to

attain 4-5 leaf stage before herbicides are applied.

Costs and benefits of seeding need to be considered during planning, including uncertainties such as deferment, failures, increased production and cost of seeding.

Consider using chemicals as an alternative to mechanical seedbed preparation where soil erosion potential, persistent weeds or soil moisture retention is a concern.

Consider the effects of improved vegetation on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation, ground water recharge and organic matter.

Where applicable, consider the effects of snowcatch and melt on the water budget.

Consider the potential for a change in plant growth and transpiration because of changes in the volume of soil water.

Consider the effects on downstream flow or aquifers that would affect other water uses or users.

Consider the effects on erosion and the movement of sediment, pathogens and soluble and sediment-attached substances carried by runoff.

Consider the effects on the use and management of nutrients and pesticides and resulting effects on surface and ground water quality.

PLANS AND SPECIFICATIONS

Plans and specifications are to be prepared for each treatment area and include planting area preparation, species to be planted, methods and rates of planting, planting depth, time of planting, fertilizer requirements, irrigation requirements and management or establishment requirements.

Generally accepted planting dates for non-irrigated land are:

| <u>MLRA</u> | <u>Spring (before)</u> | <u>Dormant Fall</u> | <u>(after)</u> |
|-------------|----------------------------|-------------------------|----------------|
| 8 | 4/1 | 10/1* | 11/15 |
| 9 | 5/1 | 8/12-9/20 | 11/1 |
| 10 | 5/15 | 8/25-9/20 | 10/20 |
| 11 | 4/20 | 9/20* | 11/1 |
| 12 | 5/15 | 9/20* | 10/20 |
| 13 | 5/15 | 8/25-9/20 | 10/20 |
| 25 | 5/15 | 8/25-9/20 | 10/20 |
| 28A | 5/1 | 9/1-10/1 | 11/1 |
| 43A | 6/1 | 9/1* | 11/1 |
| 43B | 6/1 | 8/15-9/10 | 10/10 |
| 44 | 6/1 | 9/1* | 11/1 |
| 47 | 6/1 | 8/25-9/20 | 10/20 |

Seeding dates may vary from these guidelines based on local experience and conditions.

* Fall seedings on irrigated land only.

Form ID-CPA-025, Seeding/Planting Plan – Specification will assist practice planning and documenting application. Refer to Plant Materials Technical Note 24 for species information.

Seeding rates on irrigated land may be increased to 150 percent of rates specified in Plant Materials Technical Note 24.

Actual seeding rates of applied seeding mixture will be within 80 to 125 percent of rate expressed in Seeding Specification ID-CPA-025.

On irrigated land, seed anytime growing season temperatures are favorable for seed germination and seedling growth. Avoid very hot periods such as July through mid-August.

Fall seedings will be expected to attain the 3-4 leaf stage prior to cessation of growth in the fall. This requires 30-45 days of growth from date of planting.

Legume seedings will only be made after the average date of last spring frost or 30 days prior to average date of first fall frost. Legumes may be planted in a dormant seeding, but the risk of death loss in spring due to frost should be considered.

Fertilization will be in accordance with soil tests and Nutrient Management (590) standard.

Seeded species may be considered established when they are well-rooted (not easily pulled out

of ground by hand) and/or are producing reproductive stems. A minimum of one full growing season is recommended prior to grazing.

Hay will not be harvested until near the end of the first full growing season or until the majority of plants have reached a minimum height of 12 inches.

The drill used will provide for depth control with bands or other suitable method such that seed placement depth does not exceed recommended depths expressed in Plant Materials Technical Note 24 for that species.

Broadcasting will only be used on designated emergency seedings or special situations. Broadcast seeding rates will be a minimum of 150 percent of the normal seeding rates. Where possible, seed should be covered by dragging, raking or trampling with grazing animals.

OPERATION AND MAINTENANCE

Maintenance needed for this practice includes:

1. Inspect and calibrate equipment prior to seeding to insure proper rate, distribution and depth of planting.
2. Periodic inspection and evaluation of vegetation to determine establishment and maintenance needs.
3. Management of vegetation growth, as applicable, by mowing, approved chemicals or other means to establish the desired cover.
4. Replanting due to drought, insects or other event which prevented adequate stand establishment should be addressed within 1-3 years of planting. Recommendations may vary from complete re-establishment to overseeding or spot replanting. Thin stands may only need additional grazing deferment during the growing season.
5. Repair of appurtenances and fences.
6. Pest (weeds, grasshoppers, rabbits, rodents, etc.) control will be undertaken when pests are determined to be detrimental to establishing new seedlings. Any control specified shall be in accordance with Pest Management (595).

REFERENCES

NRCS – Idaho Plant Materials Technical Notes

No. 4 – Reading Seed Packaging Labels and Calculating Seed Mixtures

No. 10 – Pasture and Range Seedings

No. 24 – Grass, Grass-Like, Forb, Legume and Woody Species for the Intermountain West

Land Resource Regions and Major Land Resource Areas of the United States, Issued 2006.